VOLUNTEER REPORT FORMAT

To be submitted to CRS at the end of volunteer assignment and shared with the Host

1.1 Assignment information:TZ33

a) Volunteer Name: David Daines
b) Host Organization: NEI, Ltd. (Moshi)
c) Assignment: NEI Out-grower Farmer Network Management
d) Dates of Assignment: (On the ground) April 21-May 4, 2015
e) Number of days worked: 11 in-country, 3 pre-arrival, 14 total

1.2.1 Objective 1 in your SOW: Evaluate resources, processes and actors in NEI's agriculture value chain to achieve its objective of the sustainable livelihood of smallholder farmers.

a) Progress with the objective.

Building on the findings and recommendations of Henry Karczynski, previous F2F volunteer from October 2014, the emphasis of the visit was to identify measures to improve the quality of raw material (vanilla beans) delivered to NEI, which has the potential for *making both the farmers and the processor better off*, as the farm price and processing yields are better for higher grade beans. The main quality "culprit" is identified by Mr. Karczynski and the literature to be immature beans, which yield little if any vanilla flavor and result in fungus spoiling processing batches. For these considerations, interviews and analysis drilled down on clues for *substantially decreasing the harvesting and delivery of immature beans*. This in effect merges Objective 1 with Objective 2.

Through four days of visits to several farmers, the following observations stood out as relevant to this matter:

1. The farmers are all able without prompting to describe what the mature bean looks like: the green color becomes pale, and 1 – 1.5 cm of the free tip turns yellow. They know that green beans are less desirable and that overripe beans, where the yellowing has spread another two centimeters, will likely split, resulting in a lower grade.
2. Harvest period at each location is around two months, and during the previous harvest season farmers recall harvesting three to four times. Thus the harvesting frequency was roughly every two weeks. (The exact frequency can be verified with NEI's reception records. The Vanilla Sales Card for Champion Farmer Isak LEMA displayed below in this report showed 6 deliveries in 37 days – an average of once every 6.2 days, not so bad, though still suboptimal, as reasoned out below.)
3. All had started cultivating vanilla between 2000 and 2007, and they said they had not been able to market their beans until NEI started operations. They uniformly denied having had any contact with alternative buyers during recent years, and they expressed appreciation that the plant is operating and buying their production. Most are intensifying their vanilla farming by planting new cuttings and are optimistic of output increasing this year and beyond.

4. Vanilla farming for nearly everyone is supplemental to more important crops and other economic activities. (A retired agriculturalist who cultivates 300 vines describes it as his "hobby".) Typically coffee, bananas and livestock occupy a more important role on these farms.

Interviews with the farmers and NEI field staff indicate that the ideal harvest and delivery window is only three to four days from the time the bean displays maturity until it is overripe and prone to split. Where the processor takes delivery at a wider interval than four days, and green beans are received along with the rest, the farmers would be tempted to harvest green beans lest they be overripe and split at the next collection time.

As flowering, pollination and fruit set are occurring continuously during two to three months, the maturation of pods is also spread out through the harvest season. Thus it is necessary to frequently inspect the vines to find beans that are in the ideal stage for harvest.

It is relevant to note also that the recommended time lapse between harvest and blanching at the plant is only 48 – 72 hours.

Price premiums and penalties are very commonly used in contract arrangements between processors and farmers to motivate farmers to improve raw material quality and compensate them for the extra work required to sustain the improvement. NEI already has a system of pricing by quality grades, linked to the length of the bean and whether or not it is split, i.e. overripe. The present system has no reference price for immature pods, so these have presumably been sorted and paid according to length.

b) Expected impacts/results

To the degree the observations listed above reflect harvest time reality, the following points stand out as keys to improving the harvested value of the vanilla beans in NEI's supplier network:

1. Harvesting and collecting more frequently, ideally every three to four days.
2. Creating a new category of immature (green) beans with a substantially lower price.
3. Train the farmers concerning these changes, especially as they carry the potential for increasing their earnings to the degree the changes are implemented.
4. Medium- and long-term, these efforts will contribute to farmers intensifying their vanilla cultivation and recruiting other community members.

c) Recommendations

1. Organize more frequent reception of harvested product at the collection centers. Plan initially on the need to go twice a week to each collection point, for example Monday/Thursday, Tuesday/Friday, and Wednesday/Saturday. Recalibrate as the harvest develops. Changes in

weather and other factors may influence the speed at which the beans around a collection point ripen.

2. To cover more points in the same period, consider switching to having personnel mobilized on motorcycles rather than being dependent on minivan and hired motorcycle service, which is time consuming and less agile. The quantities received may fit in a combination of a backpack and side baskets on the motorcycle.
3. Create the category of immature/green beans in the pricing scheme, and peg the price substantially below current Grade IV to completely discourage the practice of harvesting them while avoiding the potentially alienating effect of throwing the beans out. While competing buyers probably will be willing to receive a higher portion of green beans, one would expect them to rarely if ever pay a higher total value. Also, the relationship effect of NEI frequently visiting to collect and pay for the beans will go a long way to preventing competitors from penetrating the network.

4. Raise the price for one or more of the higher quality grades, to further motivate them to harvest the higher grades, and to prevent the potentially discouraging effects of implementing only the price penalty on immature beans.

1.2.2 Objective 2 in your SOW: Advise the team on tools to organize the farmers so as to improve on the delivery of timely and quality products. This is covered partially within Objective 1.

a) Progress with the objective: Jay asked that I spend time with Silas and Lucas mapping out a logistics plan for collecting twice a week at each collection point.
b) Expected impacts/results. Covered within Objective 1
c) Recommendations: The following table accommodates collection twice weekly at each of the 24 collection centers.

The Morogoro Region starts harvesting earlier and is far away from Moshi, so it is managed by an agent based in Morogoro City. While the three collection points are located along the same road, they cannot all be covered in one trip because of the long distances involved and the assumption that minibus route transportation is needed because the condition of the road precludes using a motorcycle for the entire haul. One alternative is to hire a pickup during the harvest season, and this would make it possible to collect from all three points on the same day.

During the September – October harvest period around Moshi and Arusha, two collectors will be needed to cover all the collection points

See Table below.

#	Region	District	Collection Point	Season	Schedule	Comments
1	Morogoro	Morogoro Rural	Mkuyuni 1½hr from Morogoro	Mid-June to July	Mon-Thu	Product will arrive Tue & Fri evening, picked up Wed & Sat morning.
2	Morogoro	Morogoro Rural	Mtombozi 1½hr from Mkuyuni	June-July	Mon-Thu	Same as above.
3	Morogoro	Morogoro Rural	Kibogwa 2hr from Mtombozi	June-July	Tue-Sat	Product arrives Wed & Sun night, picked up Thu & Mon a.m.
4	Arusha	Arumeru	Nduruma	End June-July	Mon-Thu	Collector A
5	Arusha	Arumeru	Ndatu	Sep-Oct	Mon-Thu	Collector B
6	Arusha	Arumeru	Mulala	Oct-Nov	Mon-Thu	Collector A
7	Arusha	Arumeru	Socon II	Nov-Dec	Mon-Thu	Collector A
8	Kilimanjaro	Hai	Uswaa	Sep-Oct	Mon-Thu	Collector A
9	Kilimanjaro	Hai	Mamba	Sep-Oct	Mon-Thu	Collector A
10	Kilimanjaro	Hai	Shari	Sep-Oct	Mon-Thu	Collector A
11	Kilimanjaro	Hai	Uduru	Sep-Oct	Mon-Thu	Collector A
12	Kilimanjaro	Hai	Mudio	Sep-Oct	Tue-Fri	Collector A
12	Kilimanjaro	Hai	Mbweera	Sep-Oct	Tue-Fri	Collector A
14	Kilimanjaro	Hai	Mbosho	Sep-Oct	Tue-Fri	Collector A
15	Kilimanjaro	Hai	Sono	Sep-Oct	Tue-Fri	Collector A
16	Kilimanjaro	Siha	Fuka	Sep-Oct	Mon-Thu	Collector B
17	Kilimanjaro	Siha	Wanrikati	Sep-Oct	Mon-Thu	Collector B
18	Kilimanjaro	Siha	Koboko	Sep-Oct	Mon-Thu	Collector B
19	Kilimanjaro	Siha	Manii	Sep-Oct	Mon-Thu	Collector B
20	Kilimanjaro	Moshi Rural	Iwa	Sep-Oct	Wed-Sat	Collector A
21	Kilimanjaro	Moshi Rural	Rombo	Sep-Oct	Wed-Sat	Collector A
22	Kilimanjaro	Moshi Rural	Kolula Sec. School	Sep-Oct	Wed-Sat	Collector A
23	Kilimanjaro	Romo	Ibukoni	Oct	Tue-Fri	Collector B
24	Kilimanjaro	Mwanga	Mwaniko	Sep-Oct	Tue-Fri	Collector B

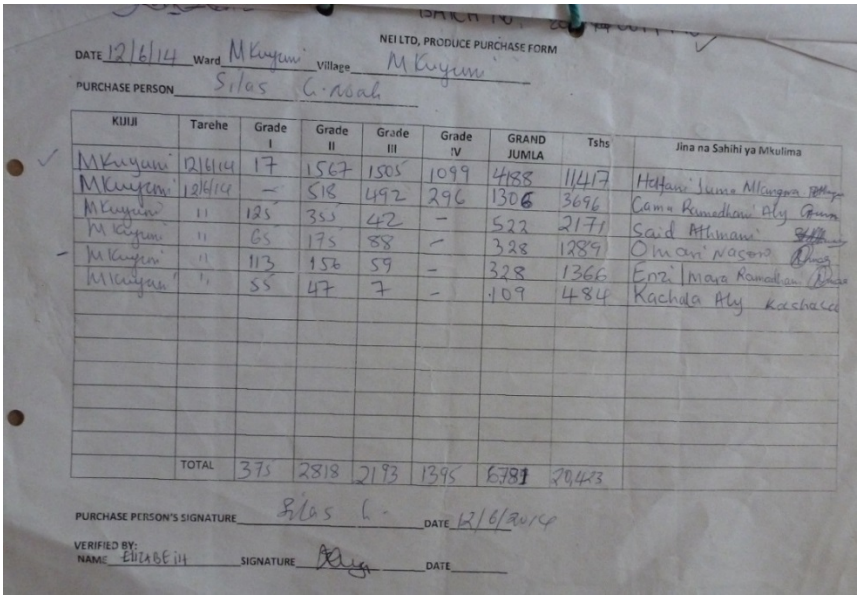
1.2.3 Objective 3 in your SOW: Facilitate the development of internal controls to achieve excellence in quality and financial management

a) Progress with the objective

By preference of NEI, this visit was conducted in advance of the harvest, therefore there was relatively little product at the plant – only cured beans in storage and relatively small quantities of finished product. To familiarize myself with the processes, records, and controls, I met with NEI staff and took photographs of the premises and raw material reception and production records. The forms I examined were as follows:

1. Produce Purchase Form.

This shows the weight received from each farmer on each date, broken out by grade, and the total value paid, with space for the name and signature of the Champion Farmer (collection point organizer). At the bottom of the form is space for the signature of the purchase person and plant secretary. Several receptions are commonly recorded on the same sheet, and the total becomes a production batch. The batch number is written on the top of the form.



NEI LTD, PRODUCE PURCHASE FORM

DATE 12/6/14 Ward M Kuyuni Village M Kuyuni

PURCHASE PERSON Silas G. Noah

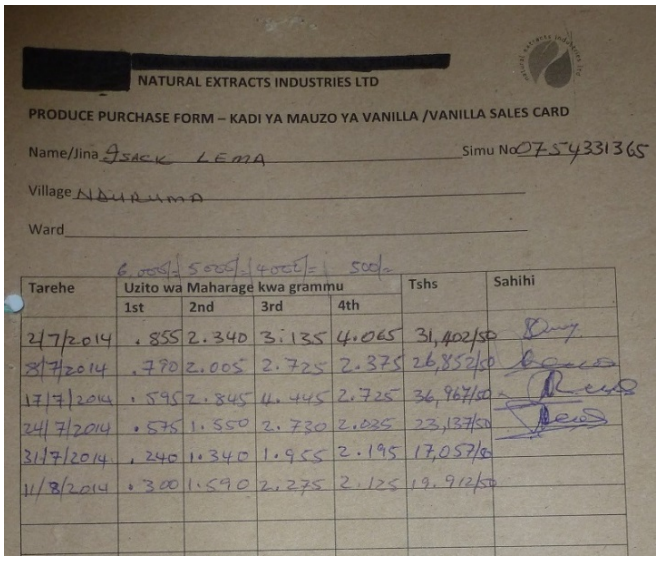
KIJIJI	Tarehe	Grade I	Grade II	Grade III	Grade IV	GRAND JUMLA	Tshs	Jina na Sahihi ya Mkulima
M Kuyuni	12/6/14	17	1567	1505	1099	4188	11417	Hellani Juma Mlangwa
M Kuyuni	12/6/14	–	518	492	296	1306	3696	Cama Ramedhani Aly
M Kuyuni	"	125	353	42	–	522	2171	Said Athmani
M Kuyuni	"	65	175	88	–	328	1289	Omari Nasoro
M Kuyuni	"	113	156	59	–	328	1366	Enzi Mara Ramadhan
M Kuyuni	"	55	47	7	–	109	484	Rachida Aly Kashaca
	TOTAL	375	2818	2193	1395	6781	20443	

PURCHASE PERSON'S SIGNATURE Silas G. DATE 12/6/2014

VERIFIED BY: NAME ELIZABETH SIGNATURE DATE

2. Purchase Produce Form / Vanilla Sales Card.

This form is intended to be kept by the individual farmer with each delivery recorded, including the weight breakout by grade and value in Shillings. There is also a space for the farmer's signature. The duplicate recording of information is good for control purposes.



[redacted] NATURAL EXTRACTS INDUSTRIES LTD

PRODUCE PURCHASE FORM – KADI YA MAUZO YA VANILLA /VANILLA SALES CARD

Name/Jina ISACK LEMA Simu No 0754331365

Village NDUMA

Ward

6.000/= 5.000/= 4.000/= 1 500/=

Tarehe	Uzito wa Maharage kwa grammu				Tshs	Sahihi
	1st	2nd	3rd	4th		
2/7/2014	.855	2.340	3.135	4.065	31,402/50	
8/7/2014	.790	2.005	2.725	2.375	26,852/50	
17/7/2014	.595	2.845	4.445	2.725	36,967/50	
24/7/2014	.575	1.550	2.730	2.035	23,137/50	
31/7/2014	.240	1.340	1.955	2.195	17,057/5	
11/8/2014	.300	1.590	2.275	2.125	19.912/50	

3. Table 1 / Reception Record

This record corresponds to the Purchase Produce Form for the purchased lots that constitute a production batch. The product is re-sorted and weighed, and there is space for explaining any unusual variance. On the form shown below for batch 20140614, there was a shrink of 4.5 percent between weight at the collection point and the plant. This is a figure that is important to control and compare over time, also any important difference between grading at the farm and the plant. In the example below, the sorting at the plant resulted in substantial more Grade IV and less Grade II and Grade III, suggesting that the raw material cost could decline if grading at the farm were the same as at the plant. There wasn't time to take a sample of all the records to calculate whether this is true generally.

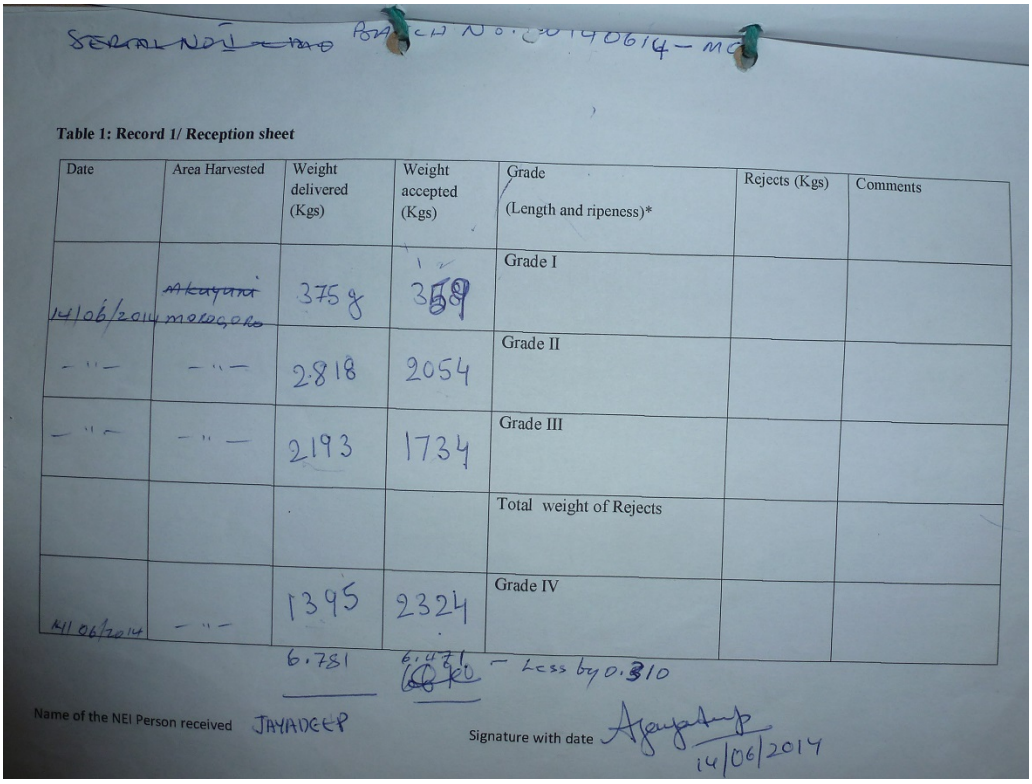


Table 1: Record 1/ Reception sheet

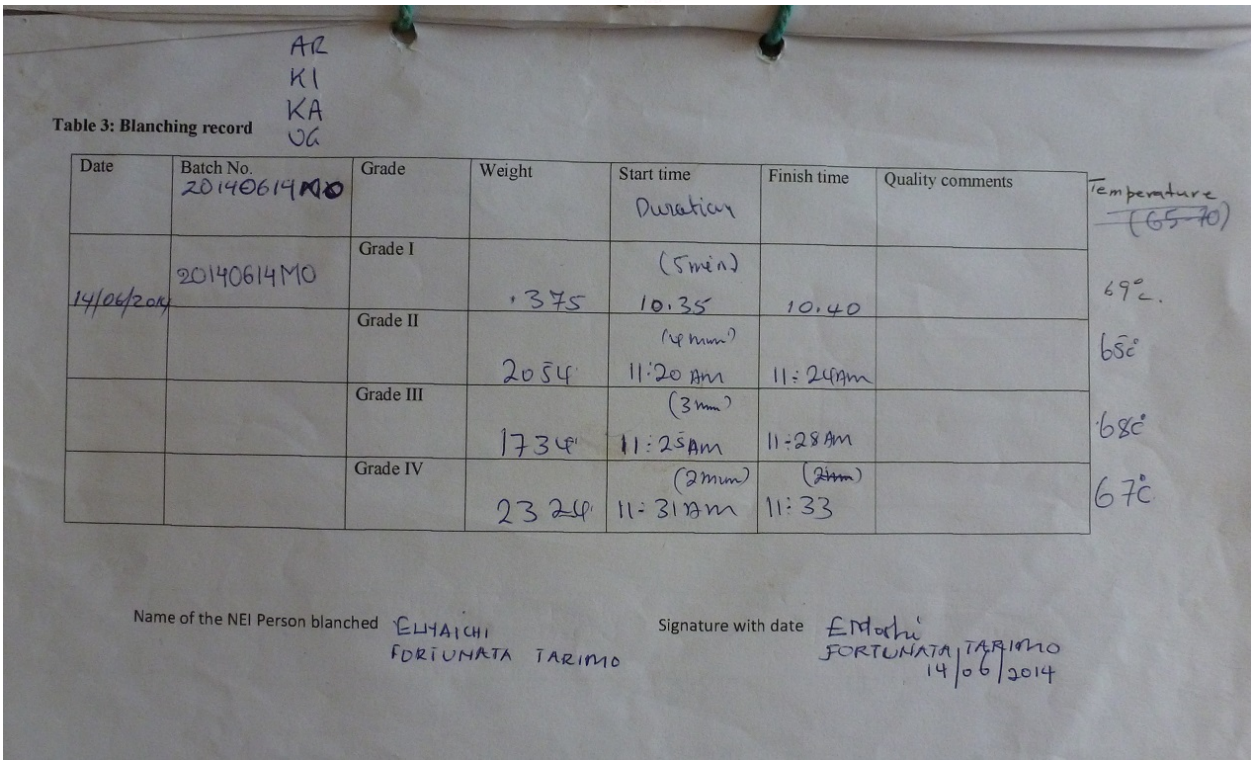
Date	Area Harvested	Weight delivered (Kgs)	Weight accepted (Kgs)	Grade (Length and ripeness)*	Rejects (Kgs)	Comments
14/06/2014	~~Akayanu~~ Motogoro	375 g	359	Grade I		
- " -	- " -	2.818	2054	Grade II		
- " -	- " -	2193	1734	Grade III		
				Total weight of Rejects		
14/06/2014	- " -	1395	2324	Grade IV		
		6.781	6.471	- Less by 0.310		

Name of the NEI Person received JAYADEEP

Signature with date Ajayadeep 14/06/2014

4. Table 3 / Blanching Record

This production record shows the essential data from the blanching of each grade within the batch. The weights by grade are the same as those shown as accepted weight in the Reception Record.



AR
KI
KA
UG

Table 3: Blanching record

Date	Batch No. 20140614MO	Grade	Weight	Start time / Duration	Finish time	Quality comments	Temperature (65-70)
14/06/2014	20140614MO	Grade I	.375	(5min) 10.35	10.40		69°c.
		Grade II	2054	(4 mm) 11:20 Am	11:24Am		65c°
		Grade III	1734	(3mm) 11:25Am	11:28Am		68c°
		Grade IV	2324	(2mm) 11:31Am	(2mm) 11:33		67c

Name of the NEI Person blanched ELIYAICHI FORTUNATA TARIMO

Signature with date Elichi FORTUNATA TARIMO 14/06/2014

5. Table 4 / Sun Drying Record

This record shows the daily actions taken with a batch during the several days it is subjected to sun drying. One thing that stands out as a possible area for improvement in control is that there is no space to record the weight of the product at the beginning and end of the sun drying process. It may be helpful for control purposes to track weights for establishing normal shrink. Certainly this will vary to a degree to weather variables like relative humidity and sunlight intensity, but this can be correlated with the outside and inside temperature readings that are recorded.

Besides air temperature, it may be helpful to measure and record the temperature of the product before and after it is given the sun treatment.

Table 4: Sun drying record **BATCH No:** 20140704 mo

No	Date	Time In	Time Out	Duration	Temperature OUT IN	Quality comments(Sunny or cloudy & moisture)
1	06/07/2014	11:30am	01:30pm	2hrs	26.5°C – 22.0°C	MODERATE SUNNY
2	07/07/2014	12:00noon	02:00pm	2hrs	26.1°C – 22.3°C	MODERATE SUNNY
3	08/07/2014	10:22am	12:22noon	2hrs	22.6°C – 20.6°C	" "
4	09/07/2014	10:20 am	12 noon	2hrs.	24.5° – 22.8°	" "
5	10/07/2014	9.33 am	11.33 am	2hrs	25.1° – 21.8°	" "
6	11/07/2014	01.10pm	4.10 pm	3hrs	23.1° – 20.7°	Cool → Due to weather
7	12/07/2014	12 noon	2.00pm	2hrs	21.4° – 21.2°	Moderate Sun
8	13/07/2014	09.20 am	11.20pm	2hrs	24.1° – 19.5°	" "
9	14/07/2014	11.00 am	2.00 pm	3hrs	22.7° – 21.2°	Cloudy
10	15/07/2014	10.54 am	12.54pm	2hrs.	23.6° – 21.3°	Moderate Sun
11	16/07/2014	10:20 am	12:20 pm	2hrs.	21.4° – 20.6°	" "
12	17/07/2014	10.35am	12.35pm	2 hrs.	23.3° – 21.1°	" "
13	18/07/2014	10.15 am	1.15 am	3hrs.	24.5° – 22.5°	Cloudy
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Name of the NEI Person responsible

Signature with date

6. Inside drying process.

Following sun drying treatments, product is kept inside on racks exposed to warmer temperatures and lower relative humidity during the day. This process continues for many days until the product moisture falls to 25%. Some written records are kept with the batches on the racks, however these are not entered into a form that is kept in the archives. For control purposes, and eventually for production-related research, it may be helpful to develop a form for tracking air temperature, product moisture, and periodically the batch weight.

I note that Jay Akkireddy is planning to develop a set of forms to facilitate data entry into NEI's new ERP system, and perhaps there are other vanilla curing operations to examine as models for a complete set of hand-written reports and data entry and analysis protocols.

b) Expected impacts/results

In general terms the lack of other raw and processed vanilla buyers in the Moshi area is a deterrent to inside or outside theft, so the biggest opportunities for gain from keeping and analyzing more complete records are (1) motivating employees to follow procedures and (2) tracking the effect of temperature, humidity, and intentional changes in techniques (for example in trials) on the curing process.

From my rather cursory intervention in the area of records and controls, a few possible suggestions come to light, however these will have to be further developed by NEI for design of new forms and procedures as the new production year takes shape and/or in connection with implementation of the new ERP system.

c) Recommendations

1. Measure and record batch weight periodically throughout the production process in order to analyze variances in shrink as they may relate to changes in production management and possible theft.
2. Create a form to record key variables for the inside drying process, and keep the records permanently on file.

1.3 Action Plan

Recommendation	Specific Action	Responsible person	By when
1. Organize more frequent reception of harvested beans.	Arrive at each collection point twice per week and adjust according to the rate of pod maturation.	Jay Akkireddy,	The intention is to start in June, with the onset of harvest in the Morogoro Region.
2. Acquire motorcycles to become more independent of time-consuming public transport in the harvest collection process.	Hire collection personnel who can operate motorcycles. Purchase motorcycles, equip with side baskets.	Jay Akkireddy	TBD
3. Create the new raw material quality grade of immature beans and establish low price.	Determine price. Redo contracts, reception forms. Train farmers.	Jay Akkireddy	The intention is to start in June, with the onset of harvest in the Morogoro Region.

4. Raise prices on higher grades.	Determine price. Redo contracts, train farmers.	Jay Akkireddy.	The intention is to start in June, with the onset of harvest in the Morogoro Region.
5. Measure and record batch weight periodically throughout the production process.	Change procedures and modify forms.	Jay Akkireddy	TBD
6. Create a form for tracking the inside drying process, and keep these records on file.	Create form, change procedure.	Jay Akkireddy	TBD

1.4 Number of people Assisted

a) Through formal training. No formal training was given.

b) Through direct technical assistance (Do not double count). **25** In this case, technical assistance encompassed one-on-one interviews on topics associated with the scope of work. In the field, this revolved around correct time to harvest.

c) Out of these above, number of host staffs. **8**

d) Training/assistance by field

Category	**Total**	**Males**	**Females**
Members/ owners	2	2	0
Employees	6	3	3
Clients/ Suppliers	12	8	4
Family Members	5	2	3
Total	25	15	10

1.5 Gender

a) What gender roles did you recognize in your host community? Did these roles play a part in your assignment? How?

At the plant, females occupy important roles in administration and processing. Elizabeth as administrative assistant handles functions in cash management, accounting, and contacts with outside suppliers and customers. Fortunata has been promoted to overseeing product curing, based on the intelligence and motivation she has shown to date.

Two of the three "champion farmers" I met were female, one a widow and the other an active agribusiness partner to her husband, who also is very active in the business. As compared to where I have worked in Malawi and DRC Congo, I observed men in the areas I visited here to be more involved in field labor, care of animals, and management of the agricultural side of the family economy. Boys and girls are observed helping with chores, and reportedly both are active pollinating vanilla, which is famously labor intensive but does not require physical strength.

Some studies of non-traditional agricultural export crops point to the negative impacts of labor demands keeping girls from school, decrease in breastfeeding, and decline in child health care. (See http://www.asareca.org/sites/default/files/RoleofMainstrmngGenderARD.pdf.)

A few people whom I visited reported that their children are sometimes involved in the pollination. ("They enjoy doing it", one said.) On the other hand, a few reported that their supplemental income from vanilla permitted them to pay for their children's school expenses.

My interactions in the field were approximately half and half with female and male adults.

b) How might CRS or the host organization improve opportunities for the women in this host or host community?

I cannot think of an intervention favoring opportunities for women, but I believe that NEI's willingness to designate females as champion farmers helps females gain economically, thus NEI's growth will be 'friendly' to women.

1.6 Value of volunteer contribution in $

a. Hours volunteer spent preparing for assignment 30
b. Estimated value of all material contributions volunteer contributed to host during assignment

My most recent agribusiness consulting rate for extended stays in Africa was $690 per day, including international travel. The rate for pre-travel research at home is $550/day. At this rate, the value of my input was ($690 x 17) + ($550 x 3) = $13,380.

1.7 Value of hosts' contribution in $ (Please consult the host as well)

a) Meals N/A
b) Transportation: Approximately $75 in bus fares and rides between in the hotel and plant.
c) Lodging N/A
d) Translation Eight field days requiring translation, @ $25/day = $200
e) Other (Specify)

1.8 Host Profile Data:

Did you obtain any data that supplements or corrects the data in the existing host information as detailed in the SOW? Please list it.

NO

1.9 Recommendations for CRS:

I believe NEI would benefit by further visits from people with experience in vanilla cultivation and processing to give them ideas for improving their processes, particularly in curing. There may be other horticultural specialties that bring sufficient parallels for application to vanilla, for example dried fruit.